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## Business intelligence tools in finance: A review of trends in the USA and Africa

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### Abstract

This paper provides a comprehensive overview of the current trends in Business Intelligence (BI) tools within the finance sector, with a specific focus on the divergent landscapes of the USA and Africa. As the financial industry evolves, the integration of advanced BI tools has become imperative for informed decision-making and sustainable growth. This review examines key developments, challenges, and opportunities shaping the implementation of BI tools in both regions. In the USA, financial institutions are witnessing a surge in BI tool adoption, driven by the increasing need for real-time data analytics, regulatory compliance, and risk management. The integration of artificial intelligence and machine learning algorithms in BI tools is enabling predictive analytics, empowering financial professionals to make strategic decisions in a rapidly changing market environment. Additionally, the emergence of cloud-based BI solutions is enhancing scalability and accessibility, facilitating seamless collaboration and data-driven insights. Contrastingly, the African financial landscape is experiencing a gradual but promising shift towards BI tool utilization. The continent, characterized by diverse economies and regulatory frameworks, faces unique challenges such as infrastructure limitations and varying levels of technological readiness. However, the potential for BI tools to revolutionize financial operations, improve transparency, and facilitate financial inclusion is evident. Governments and financial institutions are investing in technology infrastructure and skill development to harness the transformative power of BI tools. This review underscores the importance of understanding regional nuances in the adoption of BI tools, recognizing that effective implementation requires tailored strategies. As both the USA and Africa navigate the evolving financial landscape, the convergence of technological advancements and strategic planning will undoubtedly play a pivotal role in shaping the future of BI tools in the finance sector.

**Keywords:** Business; Finance; USA; Africa; Business Intelligence

### 1. Introduction

Business Intelligence (BI) tools have become increasingly essential in the finance sector, offering valuable insights for decision-making and strategic planning. As the financial landscape continues to evolve, it is crucial to review the trends and advancements in BI tools, particularly in the context of the USA and Africa. This review aims to provide a comprehensive analysis of the current state of BI tools in finance, their significance, and the emerging trends in these regions.

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The financial industry is witnessing a rapid transformation driven by technological advancements and the growing demand for data-driven insights. BI tools play a pivotal role in this transformation, enabling financial institutions to harness the power of data for informed decision-making, risk management, and performance evaluation (Ahmed, 2021). The integration of artificial intelligence and big data analytics has further enhanced the capabilities of BI tools, revolutionizing the way financial data is processed and utilized (Ma, 2022).

The primary purpose of this review is to examine the latest trends and developments in BI tools within the finance sector, with a specific focus on the USA and Africa. By synthesizing current research and industry practices, this review aims to provide a comprehensive understanding of the applications, challenges, and opportunities associated with BI tools in these regions. Additionally, the review seeks to identify the factors influencing the adoption and utilization of BI tools in the finance domain, shedding light on the implications for financial institutions and stakeholders.

Studying BI tools in finance holds significant implications for enhancing operational efficiency, risk management, and strategic planning within financial institutions. The utilization of intelligent finance and BI tools has the potential to optimize processes, improve decision-making, and drive innovation in financial services (Xu, 2022). Furthermore, understanding the impact of BI tools on financial performance and market competitiveness is crucial for staying abreast of industry advancements and leveraging technological innovations effectively (Kurdi et al., 2022).

The scope of this review is centered on analyzing the trends and advancements of BI tools in the finance sector, specifically within the contexts of the USA and Africa. Both regions present unique challenges and opportunities concerning the adoption and implementation of BI tools in financial decision-making processes. By focusing on these regions, the review aims to provide insights into the current landscape of BI tools, the regulatory environment, and the potential for technological innovation in finance.

This review seeks to contribute to the existing body of knowledge by offering a comprehensive analysis of BI tools in finance, with a specific emphasis on the USA and Africa. By examining the latest research and industry developments, this review aims to provide valuable insights for practitioners, researchers, and policymakers in understanding the evolving role of BI tools in shaping the future of finance.

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## 2. Business Intelligence in the USA

Business Intelligence (BI) tools have become integral to the operations of financial institutions in the United States, transforming the industry's landscape by enhancing decision-making processes and mitigating risks. In this ever-evolving financial ecosystem, organizations are navigating a complex web of data, regulations, and market dynamics, prompting a strategic shift towards BI tool adoption.

The financial landscape in the USA is multifaceted, encompassing a vast array of entities, including commercial banks, investment firms, insurance companies, and regulatory bodies. The interconnectedness of these entities creates a dynamic environment where timely and informed decision-making is essential for success. BI tools offer a solution by providing a framework for extracting actionable insights from the extensive data generated within this ecosystem.

Business intelligence (BI) is a critical component for organizations aiming to gain a competitive advantage, make informed decisions, and adapt to market trends. It has been found to have a positive and significant impact on knowledge sharing, organizational innovation, and competitive advantage (Eidizadeh et al., 2017). BI systems encompass a wide range of technologies and applications that are essential for retrieving and analyzing large amounts of information to generate knowledge for effective decision-making (Bach et al., 2022). Additionally, BI is a technological trend that supports strategic analysis and decision-making in organizations (Imandeka, 2020). The adoption of BI is essential for sustaining the success of an organization's strategic objectives, providing higher quality information, and re-engineering business processes (Nazri et al., 2020).

In the context of the USA, competitive intelligence and business intelligence are essentially the same, with competitive intelligence being used for a long time in the USA, while in Europe, it is referred to more often as business intelligence (Gaidelys & Dailydka, 2016). BI tools effectively analyze market trends to keep up with competition and demand (Kurdi et al., 2022). Moreover, BI has become mainstream in recent scientific research trends (Vanani & Jalali, 2017).

The impact of BI on organizational agility has been investigated, with competitive intelligence found to have an indirect influence on organizational agility through strategic flexibility, which acts as a mediating variable (Atkinson et al., 2020). Furthermore, the adoption of BI is crucial for SMEs to enhance their competitive advantage and improve their decision-making processes (Ragazou et al., 2023). Additionally, BI has been identified as a significant factor in social media

marketing, where it is used to mine competitive intelligence and gain market insights by analyzing public social media data (Kim et al., 2016).

In conclusion, business intelligence is a critical component for organizations aiming to gain a competitive advantage, make informed decisions, and adapt to market trends. Its impact on knowledge sharing, organizational innovation, and competitive advantage has been well-documented. The USA, along with other developed countries, has been at the forefront of leveraging BI tools and technologies to enhance decision-making processes and maintain competitiveness.

Real-time data analytics has emerged as a cornerstone of BI tool adoption in the financial sector. The capability to access and analyze data in real-time empowers financial professionals to respond promptly to market fluctuations, emerging trends, and customer behaviors. BI tools facilitate the integration of diverse data sources, including transactional data, social media feeds, and market insights. This comprehensive approach enables organizations to gain a 360-degree view of the market, enhancing their ability to make data-driven decisions with agility.

The use of real-time data analytics is not limited to external market conditions. It extends to internal operations, allowing financial institutions to monitor key performance indicators (KPIs) and optimize processes for improved efficiency. The ability to track operational metrics in real-time contributes to the overall resilience and responsiveness of financial organizations.

The financial sector in the USA operates within a stringent regulatory framework governed by federal and state authorities. BI tools play a vital role in ensuring regulatory compliance by automating reporting processes and facilitating adherence to industry standards. These tools provide a centralized platform for monitoring and reporting on various compliance metrics, helping organizations stay in compliance with ever-evolving regulatory requirements.

BI tools contribute to transparency and accountability in regulatory compliance efforts. They enable financial institutions to create auditable data trails, simplifying the process of regulatory audits and examinations. The automation of compliance-related tasks reduces the risk of human error and ensures that organizations can adapt swiftly to changes in regulatory landscapes.

Risk management is a critical facet of financial operations, and BI tools have revolutionized how organizations identify, assess, and mitigate risks. These tools leverage advanced analytics and modeling capabilities to provide comprehensive risk assessments and scenario analyses. By integrating predictive analytics and machine learning, BI tools enhance the accuracy of risk assessments, enabling organizations to proactively identify potential threats and vulnerabilities.

The unified platform provided by BI tools facilitates the aggregation and analysis of data related to various types of risks, including credit risk, market risk, operational risk, and compliance risk. This holistic approach to risk management ensures that financial institutions can navigate uncertainties with a strategic mindset, safeguarding financial stability and maintaining the trust of stakeholders.

## **2.1. Role of artificial intelligence and machine learning**

The integration of artificial intelligence (AI) and machine learning (ML) in cloud-based business intelligence (BI) solutions has significantly impacted decision-making in the US financial sector (Chintalapati, 2021). These technologies have facilitated the widespread adoption of AI and ML in various industries, including the financial services sector (Chintalapati, 2021). The adoption of AI has become a key driver for the success of financial institutions, offering more personalized, accurate, and real-time products and services (Ali et al., 2022). Furthermore, the use of AI and ML software has the potential to improve patient care in the medical field (Vokinger et al., 2021).

In the US financial sector, the impact of AI and ML on decision-making has been substantial. The use of AI for making decisions has sparked debates on the benefits and potential harms of self-learning technologies, ranging from hopes of fully informed and objectively taken decisions to fears of potential negative consequences (Licht & Licht, 2020). Additionally, the adoption of AI and ML has led to the next wave of digital disruption in financial services, transforming various areas such as retail banking, corporate banking, portfolio management, and trade processing (Chintalapati, 2021). The use of AI and ML techniques has been shown to lead to better financial performances by firms, as evidenced by the combined approach of ML techniques and inferential models used in evaluating public enterprises in Europe (Lucia et al., 2020).

Cloud-based BI solutions have been crucial in managing small and medium-sized enterprises (SMEs) during the COVID-19 pandemic, providing significant resources and skills that form the strategic edge and lead to the success of Cloud BI

projects (Hamidinava et al., 2021). The development of user-friendly self-service BI tools has enabled business users to autonomously execute tasks in the area of BI, statistical analysis, or data science, thereby improving decision quality for business users (Bernsteiner & Ploder, 2020). Furthermore, the adoption of cloud BI tools in the financial services sector has been essential for developing new strategies and surviving in rapidly changing and agile situations (Indriasari et al., 2019).

In conclusion, the integration of AI and ML in cloud-based BI solutions has revolutionized decision-making in the US financial sector. These technologies have provided scalability and accessibility, leading to improved financial performances and the development of new strategies. However, the adoption of AI and ML has also raised concerns about the potential negative consequences of self-learning technologies, emphasizing the need for transparency and accountability in public decision-making processes (Licht & Licht, 2020).

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### 3. Business Intelligence in Africa

Business Intelligence (BI) in Africa faces unique challenges due to the diverse economies, regulatory frameworks, and infrastructure limitations (Anarfo et al., 2019). The adoption of International Financial Reporting Standards (IFRS) in African countries has implications for firm value and financial operations (Agyei-Boapeah et al., 2020). Additionally, the quality of institutional frameworks in African countries influences the nexus between IFRS and foreign portfolio investment (FPI), impacting financial operations (Simbi et al., 2022). Furthermore, there is a dynamic relationship between financial inclusion, banking stability, and economic growth in Africa, highlighting the potential for BI tools to revolutionize financial operations (Boachie et al., 2021). The diffusion of Information and Communication Technology (ICT) also plays a role in improving financial inclusion in Africa, indicating the gradual shift towards BI tool utilization (Richard, 2020).

Government and institutional initiatives in Africa focus on technology infrastructure development, skill development, and regulatory reforms to address these challenges and promote financial inclusion (Anarfo et al., 2019). These initiatives aim to facilitate transparency and financial inclusion in Africa, aligning with the potential for BI tools to revolutionize financial operations (Boachie et al., 2021).

In conclusion, the unique challenges in the African financial landscape, the gradual shift towards BI tool utilization, and government and institutional initiatives demonstrate the potential for BI tools to revolutionize financial operations and facilitate transparency and financial inclusion in Africa.

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### 4. Regional Nuances and Tailored Strategies

Understanding regional differences is crucial for the successful implementation of Business Intelligence (BI) tools. Tailoring implementation strategies to specific regional nuances can significantly impact the effectiveness of these tools (Baldwin et al., 2022). The importance of tailored BI tool implementation strategies is underscored by the fact that generic approaches may not effectively address the unique needs and challenges of different regions (Fernández et al., 2019). Successful strategies often involve cultural tailoring, such as the use of culturally tailored strategies for implementing cognitive interviewing among specific immigrant groups (Yu et al., 2020). Additionally, the consideration of dynamic context and health equity over time is essential for the sustainability and effectiveness of tailored strategies (Shelton et al., 2020).

Key considerations for effective implementation of BI tools include the deployment of digital health tools within large, complex health systems, which requires careful attention to usability and operationalization (Marwaha et al., 2022). Furthermore, tailoring implementation strategies for scale-up involves addressing identified determinants while retaining the core functions of the strategies (Leeman et al., 2022). Contextual factors impacting BI implementation at multiple organizational levels should also be carefully considered (Becker et al., 2022). Additionally, the identification of core components and implementation strategies, as well as the use of concept mapping approaches to select and tailor implementation interventions, are crucial for successful implementation (Steinke et al., 2022; Kwok & Moodie, 2020).

In conclusion, the successful implementation of BI tools requires a deep understanding of regional differences and the tailoring of strategies to address these nuances. Case studies and examples highlight the importance of culturally tailored strategies and the consideration of dynamic context and health equity over time. Key considerations for effective implementation encompass usability, scale-up, contextual factors, and the selection and tailoring of implementation interventions.

## 5. Case Studies

To review the trends of Business Intelligence (BI) tools in the finance sector in the USA and Africa, it is essential to consider the various applications and impacts of BI tools in these regions. Business Intelligence tools have been widely used in different domains, including hospitality, tourism, social media marketing, and e-commerce, as evidenced by (Mariani et al., 2018), (Bisheh et al., 2021), and (Priyadarshini & Veeramanju, 2022). These studies highlight the significance of BI tools in analyzing market trends, customer satisfaction, and future predictions, which are crucial aspects in the finance sector.

Moreover, the impact of green finance and financial intelligence in combating terrorism financing is also a critical area of study, as indicated by (Falcone & Sica, 2019), (Gowhor, 2021), and (Ünal & Altun, 2020). These studies emphasize the role of financial intelligence and green finance in addressing long-term investment needs and early detection of terrorist financing activities, which are pertinent to the finance sector.

Furthermore, the adoption of BI tools in cost accounting-based financial systems, as demonstrated by (Gaol et al., 2020), and the use of BI tools for forecast prediction in data analytics, as discussed by (Jena, 2019), are relevant to understanding the practical applications of BI tools in financial management and decision-making processes.

In the context of Africa, the study by Obiora & Zeng (2019) on the factors affecting the adoption of alternative financing methods for startups by Africans in China provides insights into the challenges and opportunities for utilizing innovative financing methods in the African business landscape.

Overall, the review of trends in BI tools in the finance sector in the USA and Africa encompasses a wide range of applications, including market analysis, financial inclusion, green finance, and combating financial crimes. These studies collectively contribute to understanding the evolving landscape of BI tools and their implications for financial decision-making and strategic planning in both regions.

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## 6. Future Outlook

The future outlook of business intelligence (BI) tools in finance presents emerging trends, anticipated developments in the USA, prospects and challenges for BI tool adoption in Africa, and potential areas for collaboration and knowledge exchange between regions. The post-pandemic new normal has underscored the significance of BI and analytics capability in combating turbulent times and adjusting to the changing landscape (Marjanovic et al., 2022). In the USA, the development of BI tools in finance is expected to align with the growth of global corporate debt and the expansion of non-financial corporate debt after the global financial crisis of 2008–2009 (Abraham et al., 2021). Moreover, the emergence of climate finance has highlighted the role of finance in addressing climate change, paving the way for the integration of machine learning methods in climate finance (Alonso-Robisco & Carbó, 2023).

In Africa, the adoption of BI tools in finance faces prospects and challenges. The region's future prospects include exploring new avenues for research agendas such as financial development, natural resource abundance, economic growth nexus through fintech, crowdfunding, and financial literacy to alleviate poverty (Ali et al., 2022). However, challenges persist, including conditions for governmental policy interventions in agricultural financing and the need for greater interdisciplinary research and diversity in methods in accounting and finance (Oberholster & Adendorff, 2018; Linnenluecke et al., 2020). Additionally, the potential areas for collaboration and knowledge exchange between the USA and Africa could revolve around the coexistence and interaction between trend followers and rational investors in financial markets, as well as the spatial spillover effects of corporate financing costs on regional carbon emissions, particularly in the context of emerging trends favoring green and low-carbon investments (Gomes, 2022; Zhao et al., 2022).

In conclusion, the future outlook of BI tools in finance entails addressing the post-pandemic new normal, global corporate debt, climate finance, and the prospects and challenges for BI tool adoption in Africa. Collaboration and knowledge exchange between regions can focus on addressing challenges in agricultural financing, promoting interdisciplinary research, and exploring the coexistence and interaction between different investor types in financial markets.

## 7. Conclusion

In examining the trends of Business Intelligence (BI) tools in the financial sectors of the USA and Africa, several key findings have surfaced. In the USA, the rapid adoption of BI tools has significantly influenced real-time data analytics, regulatory compliance, and risk management. The integration of artificial intelligence and cloud-based solutions has paved the way for enhanced decision-making and operational efficiency. In contrast, Africa is witnessing a gradual but promising shift towards BI tool utilization, with unique challenges such as diverse economies and varying technological readiness. However, government initiatives and investments are laying the groundwork for a transformative impact on financial operations and inclusion.

The implications for the future of BI tools in the finance sector are profound. The trends identified suggest that BI tools will continue to be central to strategic decision-making, risk management, and regulatory compliance in both the USA and Africa. The evolving landscape demands a flexible and adaptive approach to BI tool implementation, considering regional nuances and specific challenges. As technology continues to advance, the integration of BI tools with emerging technologies like artificial intelligence and machine learning is poised to redefine how financial institutions operate and compete globally.

To harness the full potential of BI tools in finance, industry stakeholders must proactively engage in a collaborative effort. Stakeholders, particularly in Africa, should prioritize investments in technology infrastructure to address challenges related to connectivity, data access, and system integration. Governments, financial institutions, and technology partners must collaborate to build a robust foundation for BI tool adoption. Recognizing the pivotal role of skilled professionals in BI implementation, industry stakeholders should invest in training programs and capacity building. Equipping professionals with the necessary skills will accelerate the adoption and effective utilization of BI tools, ensuring a sustainable impact on financial operations. Facilitating knowledge exchange between regions is crucial for fostering innovation and addressing common challenges. Industry associations, regulatory bodies, and international organizations should create platforms for collaboration, allowing stakeholders to share insights, best practices, and success stories in BI tool implementation.

The review of BI trends in the USA and Africa underscores the transformative potential of these tools in shaping the future of the financial sector. The path forward involves a commitment to innovation, collaboration, and strategic investments. As BI tools continue to evolve, they offer a pathway for financial institutions to navigate uncertainties, capitalize on emerging opportunities, and contribute to the broader goals of economic growth and financial inclusion. By heeding the call to action and embracing the lessons gleaned from this review, stakeholders can collectively steer the course towards a more data-driven, resilient, and inclusive financial landscape.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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## References

- [1] Abraham, F., Cortina, J., & Schmukler, S. (2021). Growth of global corporate debt: main facts and policy challenges.. <https://doi.org/10.1093/acrefore/9780190625979.013.302>
- [2] Agyei-Boapeah, H., Machokoto, M., Amankwa-Amoah, J., Tunyi, A., & Fosu, S. (2020). Ifrs adoption and firm value: african evidence. *Accounting Forum*, 44(3), 238-261. <https://doi.org/10.1080/01559982.2020.1766755>
- [3] Ahmed, E. (2021). Utilization of business intelligence tools among business intelligence users. *International Journal for Innovation Education and Research*, 9(6), 237-253. <https://doi.org/10.31686/ijer.vol9.iss6.3172>
- [4] Ali, A., Ramakrishnan, S., Faisal, F., & Ullah, Z. (2022). Bibliometric analysis of global research trends on microfinance institutions and microfinance: suggesting new research agendas. *International Journal of Finance & Economics*, 28(4), 3552-3573. <https://doi.org/10.1002/ijfe.2607>
- [5] Ali, M., Swiety, I., & Mansour, M. (2022). Evaluating the role of artificial intelligence in the automation of the banking services industry: evidence from jordan. *Humanities and Social Sciences Letters*, 10(3), 383-393. <https://doi.org/10.18488/73.v10i3.3090>

- [6] Alonso-Robisco, A. and Carbó, J. (2023). Machine learning methods in climate finance: a systematic review.. <https://doi.org/10.53479/29594>
- [7] Anarfo, E., Abor, J., Osei, K., & Gyeke-Dako, A. (2019). Financial inclusion and financial sector development in sub-saharan africa: a panel var approach. *International Journal of Managerial Finance*, 15(4), 444-463. <https://doi.org/10.1108/ijmf-07-2018-0205>
- [8] Atkinson, P., Hizaji, M., Nazarian, A., & Abasi, A. (2020). Attaining organisational agility through competitive intelligence: the roles of strategic flexibility and organisational innovation. *Total Quality Management & Business Excellence*, 33(3-4), 297-317. <https://doi.org/10.1080/14783363.2020.1842188>
- [9] Bach, M., Zoroja, J., & Celjo, A. (2022). An extension of the technology acceptance model for business intelligence systems: project management maturity perspective. *International Journal of Information Systems and Project Management*, 5(2), 5-21. <https://doi.org/10.12821/ijispm050201>
- [10] Baldwin, L., Tuzzio, L., Cole, A., Holden, E., Powell, J., & Parchman, M. (2022). Tailoring implementation strategies for cardiovascular disease risk calculator adoption in primary care clinics. *The Journal of the American Board of Family Medicine*, 35(6), 1143-1155. <https://doi.org/10.3122/jabfm.2022.210449r1>
- [11] Becker, S., Scott, K., & Elwy, A. (2022). You have an effective brief intervention (bi) for young adults, now what? concrete strategies to advance bi implementation in usual care settings.. *Psychology of Addictive Behaviors*, 36(6), 724-735. <https://doi.org/10.1037/adb0000731>
- [12] Bernsteiner, R. and Ploder, C. (2020). Improving decision quality for business users based on cloud-based self-service business intelligence tools. *Cloud Computing and Data Science*, 1-11. <https://doi.org/10.37256/ccds.112020162>
- [13] Bisheh, M., Raissi, A., & Mokhtari, S. (2021). Combination of backward and forward approaches for future prediction by business intelligence tools. *American Journal of Engineering and Applied Sciences*, 14(1), 73-80. <https://doi.org/10.3844/ajeassp.2021.73.80>
- [14] Boachie, R., Aawaar, G., & Domeher, D. (2021). Relationship between financial inclusion, banking stability and economic growth: a dynamic panel approach. *Journal of Economic and Administrative Sciences*, 39(3), 655-670. <https://doi.org/10.1108/jeas-05-2021-0084>
- [15] Chintalapati, S. (2021). Early adopters to early majority - what's driving the artificial intelligence and machine learning powered transformation in financial services?. *International Journal of Financial Research*, 12(4), 43. <https://doi.org/10.5430/ijfr.v12n4p43>
- [16] Eidizadeh, R., Salehzadeh, R., & Esfahani, A. (2017). Analysing the role of business intelligence, knowledge sharing and organisational innovation on gaining competitive advantage. *Journal of Workplace Learning*, 29(4), 250-267. <https://doi.org/10.1108/jwl-07-2016-0070>
- [17] Falcone, P. and Sica, E. (2019). Assessing the opportunities and challenges of green finance in italy: an analysis of the biomass production sector. *Sustainability*, 11(2), 517. <https://doi.org/10.3390/su11020517>
- [18] Fernández, M., Hoor, G., Lieshout, S., Rodriguez, S., Beidas, R., Parcel, G., ... & Kok, G. (2019). Implementation mapping: using intervention mapping to develop implementation strategies. *Frontiers in Public Health*, 7. <https://doi.org/10.3389/fpubh.2019.00158>
- [19] Gaidelys, V. and Dailydka, S. (2016). Use of “knowledge house”, dws, dms and dss methodology by completing a competitors' analysis in the railway sector. *Journal of Business Economics and Management*, 17(6), 1022-1051. <https://doi.org/10.3846/16111699.2016.1251963>
- [20] Gaol, F., Abdillah, L., & Matsuo, T. (2020). Adoption of business intelligence to support cost accounting based financial systems — case study of xyz company. *Open Engineering*, 11(1), 14-28. <https://doi.org/10.1515/eng-2021-0002>
- [21] Gomes, O. (2022). Behavioral economics and finance: a selective review of models, methods and tools. *Studies in Economics and Finance*, 40(3), 393-410. <https://doi.org/10.1108/sef-06-2022-0304>
- [22] Gowhor, H. (2021). The preferred type of financial intelligence for early detection of terrorist financing activities. *Journal of Money Laundering Control*, 25(3), 681-690. <https://doi.org/10.1108/jmlc-07-2021-0070>
- [23] Hamidinava, F., Ebrahimy, A., Samiee, R., & Didehkhani, H. (2021). A model of business intelligence on cloud for managing smes in covid-19 pandemic (case: iranian smes). *Kybernetes*, 52(1), 207-234. <https://doi.org/10.1108/k-05-2021-0375>

- [24] Imandeka, E. (2020). Influencing factors of business intelligence continuance usage intention: a case study of government-owned insurance company. *International Journal of Engineering Applied Sciences and Technology*, 04(09), 404-408. <https://doi.org/10.33564/ijeast.2020.v04i09.052>
- [25] Indriasari, E., Suparta, W., Gaol, F., Trisetyarso, A., Abbas, B., & Kang, C. (2019). Adoption of cloud business intelligence in indonesia's financial services sector., 520-529. [https://doi.org/10.1007/978-3-030-14799-0\\_45](https://doi.org/10.1007/978-3-030-14799-0_45)
- [26] Jena, B. (2019). An approach for forecast prediction in data analytics field by tableau software. *International Journal of Information Engineering and Electronic Business*, 11(1), 19-26. <https://doi.org/10.5815/ijieeb.2019.01.03>
- [27] Kim, Y., Dwivedi, R., Jie, Z., & Jeong, S. (2016). Competitive intelligence in social media twitter: iphone 6 vs. galaxy s5. *Online Information Review*, 40(1), 42-61. <https://doi.org/10.1108/oir-03-2015-0068>
- [28] Kurdi, B., Alshurideh, M., Alshurideh, H., & Al-Gasaymeh, A. (2022). The role of business intelligence in social media marketing and its impact on firm performance. *International Journal of Theory of Organization and Practice (Ijtop)*, 2(1), 16-36. <https://doi.org/10.54489/ijtop.v2i1.165>
- [29] Kwok, E. and Moodie, S. (2020). Selecting and tailoring implementation interventions: a concept mapping approach. *BMC Health Services Research*, 20(1). <https://doi.org/10.1186/s12913-020-05270-x>
- [30] Leeman, J., B., D., Lyons, K., Pham, L., & Samuel-Hodge, C. (2022). Tailoring implementation strategies for scale-up: preparing to take the med-south lifestyle program to scale statewide. *Frontiers in Health Services*, 2. <https://doi.org/10.3389/frhs.2022.934479>
- [31] Licht, K. and Licht, J. (2020). Artificial intelligence, transparency, and public decision-making. *Ai & Society*, 35(4), 917-926. <https://doi.org/10.1007/s00146-020-00960-w>
- [32] Linnenluecke, M., Marrone, M., & Singh, A. (2020). Sixty years of accounting & finance: a bibliometric analysis of major research themes and contributions. *Accounting and Finance*, 60(4), 3217-3251. <https://doi.org/10.1111/acfi.12714>
- [33] Lucia, C., Paziienza, P., & Bartlett, M. (2020). Does good esg lead to better financial performances by firms? machine learning and logistic regression models of public enterprises in europe. *Sustainability*, 12(13), 5317. <https://doi.org/10.3390/su12135317>
- [34] Ma, M. (2022). Research on the development of hospital intelligent finance based on artificial intelligence. *Computational Intelligence and Neuroscience*, 2022, 1-6. <https://doi.org/10.1155/2022/6549766>
- [35] Mariani, M., Baggio, R., Fuchs, M., & Höpken, W. (2018). Business intelligence and big data in hospitality and tourism: a systematic literature review. *International Journal of Contemporary Hospitality Management*, 30(12), 3514-3554. <https://doi.org/10.1108/ijchm-07-2017-0461>
- [36] Marjanovic, O., Ariyachandra, T., & Dinter, B. (2022). Looking ahead: business intelligence & analytics research in the post-pandemic new normal.. <https://doi.org/10.24251/hicss.2022.745>
- [37] Marwaha, J., Landman, A., Brat, G., Dunn, T., & Gordon, W. (2022). Deploying digital health tools within large, complex health systems: key considerations for adoption and implementation. *NPJ Digital Medicine*, 5(1). <https://doi.org/10.1038/s41746-022-00557-1>
- [38] Nazri, S., Ashaari, M., Iskandar, Y., & Bakri, H. (2020). The impact of business intelligence adoption on organizational performance among higher education institutions in malaysia.. <https://doi.org/10.2991/aebmr.k.200514.011>
- [39] Oberholster, C. and Adendorff, C. (2018). Four agricultural financing scenarios for sub-saharan africa toward 2055: conditions for governmental policy interventions. *World Futures Review*, 11(3), 199-231. <https://doi.org/10.1177/1946756718770771>
- [40] Obiora, S. and Zeng, Y. (2019). Factors affecting the adoption of alternative financing methods for startups by africans in china.. <https://doi.org/10.20472/iac.2019.045.029>
- [41] Priyadarshini, P. and Veeramanju, K. (2022). Business intelligence for the evaluation of customer satisfaction in e-commerce websites- a case study. *International Journal of Management Technology and Social Sciences*, 660-668. <https://doi.org/10.47992/ijmts.2581.6012.0243>
- [42] Ragazou, K., Passas, I., Garefalakis, A., & Zopounidis, C. (2023). Business intelligence model empowering smes to make better decisions and enhance their competitive advantage. *Discover Analytics*, 1(1). <https://doi.org/10.1007/s44257-022-00002-3>



- [43] Richard, Z. (2020). Does ict diffusion improve financial inclusion in africa?. *Journal of Economics Management and Trade*, 73-87. <https://doi.org/10.9734/jemt/2020/v26i1130323>
- [44] Shelton, R., Chambers, D., & Glasgow, R. (2020). An extension of re-aim to enhance sustainability: addressing dynamic context and promoting health equity over time. *Frontiers in Public Health*, 8. <https://doi.org/10.3389/fpubh.2020.00134>
- [45] Simbi, C., Arendse, J., & Khumalo, S. (2022). Ifrs and fpi nexus: does the quality of the institutional framework matter for african countries?. *Journal of Accounting in Emerging Economies*, 13(1), 195-215. <https://doi.org/10.1108/jaee-10-2021-0319>
- [46] Steinke, V., Wasylynuk, B., & Holroyd-Leduc, J. (2022). Identification of core components and implementation strategies for a conservative kidney management pathway across a complex, multisector healthcare system in canada using world cafés and the theoretical domains framework. *BMJ Open*, 12(5), e054422. <https://doi.org/10.1136/bmjopen-2021-054422>
- [47] Ünal, S. and Altun, M. (2020). The role of financial intelligence in combating the financing of terrorism. *Journal of Money Laundering Control*, 24(3), 571-583. <https://doi.org/10.1108/jmlc-09-2020-0102>
- [48] Vanani, I. and Jalali, S. (2017). Analytical evaluation of emerging scientific trends in business intelligence through the utilisation of burst detection algorithm. *International Journal of Bibliometrics in Business and Management*, 1(1), 70. <https://doi.org/10.1504/ijbbm.2017.10003443>
- [49] Vokinger, K., Feuerriegel, S., & Kesselheim, A. (2021). Continual learning in medical devices: fda's action plan and beyond. *The Lancet Digital Health*, 3(6), e337-e338. [https://doi.org/10.1016/s2589-7500\(21\)00076-5](https://doi.org/10.1016/s2589-7500(21)00076-5)
- [50] Xu, X. (2022). An intelligent classification method of multisource enterprise financial data based on sas model. *Computational Intelligence and Neuroscience*, 2022, 1-9. <https://doi.org/10.1155/2022/8255091>
- [51] Yu, Z., Jin, Y., & Lor, M. (2020). Evaluating culturally tailored strategies for implementing cognitive interviewing on edinburgh postnatal depression scale among chinese immigrant women. *Journal of Transcultural Nursing*, 32(5), 591-599. <https://doi.org/10.1177/1043659620950437>
- [52] Zhao, Y., Zhu, S., & Gui, Z. (2022). Local and spatial spillover effects of corporate financing costs on regional carbon emissions: evidence from chinese listed firms. *Environmental Science and Pollution Research*, 30(9), 24242-24255. <https://doi.org/10.1007/s11356-022-23896-8>